

Cytokine profiles in highly active antiretroviral treatment non-adherent, adherent and naive HIV-1 infected patients in Western Kenya

Abstract

Background: Cytokines play an important role in signaling the immune system to build an adequate immune response against HIV. HIV distorts the balance between pro and anti-inflammatory cytokines causing viral replication. Highly active antiretroviral treatment (HAART) acts by trying to restore pro and anti-inflammatory cytokine balance. It is not clear how HAART non-adherence influences circulating cytokine levels. This study therefore determined cytokine levels in HAART non-adherent individuals.

Methods: This cross-sectional study recruited 163 participants (51 controls, 23 HIV-1+ HAART naive, 28 HAART-adherent 6 months, 19 HAART-adherent 12 months and 42 HAART non-adherent). Cytokines were analyzed by ELISA while CD4 T cells determined in 3.0 μ l of whole blood using BD FACSCaliburTM and viral load in 0.2ml plasma sample using Abbott Molecular m2000sp sample preparation and m2000rt real-time amplification and detection systems (Abbott Molecular Inc., Illinois, USA) according to the manufacturer's methods.

Results: IL-4, IL-6, IL-10, TNF- α and TGF- β were significantly elevated in HIV-1 HAART non-adherent compared with HIV-1 HAART adherent and healthy controls $P < 0.01$. IFN- γ was significantly decreased in HIV-1 HAART non-adherent compared with HIV-1 HAART adherent and healthy controls $P < 0.01$. TNF- α and TGF- β were significantly reduced in HIV-1 HAART adherent patients at 12 months compared to those at 6 months $P < 0.01$. IL-4 and IL-10 correlated positively with viral load. IL-4, IL-6, IL-10, TNF- α and TGF- β associated inversely with CD4 T cell counts and body mass index (BMI).

Conclusion: This study established that HAART adherence is immunologically beneficial to the pro and anti-inflammatory cytokine balance milieu while non-adherence appears to cause alterations in pro and anti-inflammatory cytokines warping the balance in this dichotomy.

Keywords: Cytokines; HAART; non-adherence.

Authors:

Fauzia Musa , Nathan Shaviya , Fidelis Mambo , Collins Abonyo , Erick Barasa , Philemon Wafula , George Sowayi , Mustafa Barasa , Tom Were